

Abstract Submitted
for the DAMOP05 Meeting of
The American Physical Society

Electron-impact vibrational excitation of CO₂ in a cluster environment¹ ILYA FABRIKANT, University of Nebraska — Electron collisions with CO₂ clusters are strongly affected by vibrational Feshbach resonances¹ which appear due to the long-range polarization interaction between the electron and the cluster. We have developed a theory² allowing inclusion of this effect in the attachment process and also in vibrational excitation of one molecular unit in the cluster environment. We predict a rich resonance structure in vibrational excitation of Fermi polyads representing mixtures of symmetric stretch and bending vibrations. A zero-range-potential model has been developed to investigate a possibility of simultaneous vibrational excitation of two or more molecular units. ¹ H. Hotop, M.-W. Ruf, M. Allan, I. I. Fabrikant, *Adv. At. Mol. Opt. Phys.* **49**, 85 (2003). ² I. I. Fabrikant and H. Hotop, *Phys. Rev. Lett.*, to be published.

¹Supported by the National Science Foundation

Ilya Fabrikant
University of Nebraska

Date submitted: 24 Jan 2005

Electronic form version 1.4